

CLAIMS

What is claimed is:

1. A computer-implemented method of designing graphics to be printed on a planar substrate that will be cut and folded to yield a three-dimensional carton having outer surface regions that will be printed with the graphics so designed, the method comprising:
 - (a) accepting structural information relating to said carton;
 - (b) designing graphics to cover surface regions of said carton to be printed with graphics;
 - (c) superimposing graphics designed at step (b) on a computer-generated image of relevant regions of said planar substrate to be printed with graphics;
 - (d) manipulating, as required, said graphics designed at step (b) to cover relevant said portions of each said surface, as viewed on said computer-generated image;
 - (e) creating a three-dimensional computer-generated image of said carton, said image including graphics designed at step (b) and, if required, manipulated at step (d);
 - (f) visually confirming from said computer-generated image created at step (e) acceptability of graphics covering relevant said regions, and modifying, if required, said graphics; and
 - (g) outputting a computer-readable file containing designed said graphics whose acceptability was confirmed at step (f).

2. The method of claim 1, wherein at step (a), said structural information includes at least one of (i) a pattern showing cuts to be made on said planar substrate to define at least one of a panel and a flap, (ii) information defining where at least one of a panel and a flap are to be folded through a fold angle, and (iii) information relating to composition of said substrate.
3. The method of claim 1, further including generating at least one clipping mask to avoid printing on a surface of said carton that is not visible when fabrication of said carton is complete.
4. The method of claim 1, further identifying regions of graphics to be printed on said carton that are likely to experience printing ink bleeding and compensating for such bleeding in laying out said regions of said graphics.
5. The method of claim 1, wherein manipulating at step (d) includes at least one of (i) rotation, (ii) scaling, (iii) copying, (iv) cutting, and (v) pasting.
6. The method of claim 1, further including:
 - (h) providing said computer-readable file output at (g) as input to a carton fabrication system.
7. The method of claim 1, wherein said graphics are designed for printing on a carton having at least five surfaces.
8. A system for the design of graphics to be printed on a planar substrate that will be cut and folded to yield a three-dimensional carton regions of whose outer surface will be printed with the graphics so designed, the system comprising:

a computer system including a processor able to execute a software program allowing a user of said computer system to design and manipulate graphics and view said graphics on a monitor coupled to said computer system, and said monitor;

a computer readable storage medium containing said software program;

means for providing structural information relating to said carton to said software program executed by said computer system;

means for allowing said user of said computer system to design graphics to cover relevant regions of each surface of said carton to be printed with said graphics, and to superimpose user-manipulable graphics so designed on an image generated by said computer-system and displayed on said monitor of said relevant regions of said planar substrate;

means for creating a three-dimensional computer-generated image of said carton displayable on said monitor, said image including user-manipulable designed said graphics;

wherein said user can visually confirm from said three-dimensional computer-generated image acceptability of said graphics, and can modify, as required, said graphics; and

means for outputting a computer-readable file containing designed said graphics whose acceptability is confirmed by said user.

9. The system of claim 8, wherein said structural information includes at least one of (i) a pattern showing cuts to be made on said planar substrate to define at least one of a panel and a flap, (ii) information defining where at least one of a panel and a flap are to be folded through a fold angle, and (iii) information relating to composition of said substrate.
10. The system of claim 8, further including means for generating at least one clipping mask to avoid printing on a surface of said carton that is not visible when fabrication of said carton is complete.
11. The system of claim 8, further including means for identifying regions of graphics to be printed on said carton that are likely to experience printing ink bleeding and compensating for such bleeding in laying out said regions of said graphics.

12. The system of claim 8 wherein user-manipulation of said graphics includes at least one of (i) rotation, (ii) scaling, (iii) copying, (iv) cutting, and (v) pasting.
13. The system of claim 8 further including:

a carton fabrication system to which said computer-readable file output from said computer sub-system is input to control at least printing of cartons within said carton fabrication system.
14. A computer-readable medium storing a software program that when executed by a computer processor will carry out the following steps to assist in the design of graphics to be printed on a planar substrate that will be cut and folded to yield a three-dimensional carton regions of whose outer surface will be printed with the graphics:
 - (a) receive as input structural information relating to said carton;
 - (b) enable a user of said software program to design graphics to cover regions of each surface of said carton that is to be printed with graphics;
 - (c) superimpose graphics designed at step (b) on a computer-generated image of relevant regions of said planar substrate to be printed with graphics;
 - (d) manipulate, as required, said graphics designed at step (b) to cover relevant said portions of each said surface, as viewed on said computer-generated image;
 - (e) create a three-dimensional computer-generated image of said carton, said image including graphics designed at step (b) and, if required, manipulated at step (d);
 - (f) enable a user of said software program to visually confirm from said computer-generated image created at step (e) acceptability of graphics covering relevant said regions, and modifying, if required, said graphics; and

- (g) outputting a computer-readable file containing designed said graphics whose acceptability was confirmed at step (f).
15. The computer readable medium of claim 14, wherein said computer-readable file output at step (g) is useable as input to a carton fabrication system.
16. A planar substrate having at least some surface regions printed with graphics, said substrate cuttable and foldable to create a three-dimensional carton, the substrate produced by a computer-implemented method as follows:
- (a) accepting structural information relating to said carton;
 - (b) designing graphics to cover surface regions of said carton to be printed with graphics;
 - (c) superimposing graphics designed at step (b) on a computer-generated image of relevant regions of said planar substrate to be printed with graphics;
 - (d) manipulating, as required, said graphics designed at step (b) to cover relevant said portions of each said surface, as viewed on said computer-generated image;
 - (e) creating a three-dimensional computer-generated image of said carton, said image including graphics designed at step (b) and, if required, manipulated at step (d);
 - (f) visually confirming from said computer-generated image created at step (e) acceptability of graphics covering relevant said regions, and modifying, if required, said graphics;
 - (g) outputting a computer-readable file containing designed said graphics whose acceptability was confirmed at step (f); and
 - (h) using said computer-readable file output at step (g) to control at least in part printing of said graphics upon at least some surface regions of said planar substrate.

17. A carton formed from a planar substrate that was printed and cut and subsequently folded to yield a three-dimensional carton having outer surface regions printed with the graphics, the carton produced by the following computer-implementable process:
- (a) accepting structural information relating to said carton;
 - (b) designing graphics to cover surface regions of said carton to be printed with graphics;
 - (c) superimposing graphics designed at step (b) on a computer-generated image of relevant regions of said planar substrate to be printed with graphics;
 - (d) manipulating, as required, said graphics designed at step (b) to cover relevant said portions of each said surface, as viewed on said computer-generated image;
 - (e) creating a three-dimensional computer-generated image of said carton, said image including graphics designed at step (b) and, if required, manipulated at step (d);
 - (f) visually confirming from said computer-generated image created at step (e) acceptability of graphics covering relevant said regions, and modifying, if required, said graphics;
 - (g) outputting a computer-readable file containing designed said graphics whose acceptability was confirmed at step (f); and
 - (h) using said computer-readable file output at step (g) to control at least in part printing of said graphics upon at least some surface regions of said planar substrate.
18. A carton according to claim 17, wherein said substrate is printed with said graphics before said substrate is cut.

19. A carton according to claim 17, wherein at step (a), said structural information includes at least one of (i) a pattern showing cuts to be made on said planar substrate to define at least one of a panel and a flap, (ii) information defining where at least one of a panel and a flap are to be folded through a fold angle, and (iii) information relating to composition of said substrate.
20. A carton according to claim 17, wherein production of said carton includes at least one of (i) generating at least one clipping mask to avoid printing on a surface of said carton that is not visible when fabrication of said carton is complete, and (ii) identifying regions of graphics to be printed on said carton that are likely to experience printing ink bleeding and compensating for such bleeding in laying out said regions of said graphics.